

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method of gating for a medical imaging system, the method comprising:

selecting a non-electrical sensor, the non-electrical sensor being an acceleration sensor;

utilizing the non-electrical sensor to acquire information for gating; [[and]]

determining timing of a gating signal prior to displacement of a body part of a patient based upon the acquired information; and

gating using the ~~acquired information~~ gating signal.

2. (previously presented) The method of claim 1 wherein the gating comprises gating within a magnetic resonance imaging system.

3. (previously presented) The method of claim 1 wherein the gating comprises gating within a computed tomography imaging system.

4. (previously presented) The method of claim 1 wherein the gating comprises gating within a PET-CT imaging system.

5. (previously presented) The method of claim 1 wherein the gating comprises gating within an X-ray imaging system.

6. (previously presented) The method of claim 1 wherein the gating comprises gating within an ultrasound imaging system.

7. (cancelled)

8. (currently amended) The method of claim 1 further comprising obtaining [[a]] the gating signal using signature analysis.

9. (original) The method of claim 8 wherein using signature analysis includes providing a training set within a database and employing a pattern recognition technique to extract a gating signal.

10. (currently amended) A method of gating for a medical imaging system, the method comprising:

selecting a non-electrical accelerometer;

utilizing the non-electrical accelerometer to acquire information for cardiac gating;

sensing cardiac vibrations with the accelerometer and acquiring an acceleration waveform with the accelerometer; [[and]]

calculating a first derivative of the acceleration waveform to obtain a jerk waveform;

determining a salient-peak of the jerk waveform; and

gating using the acquired acceleration waveform salient-peak as a trigger point.

11-13. (canceled)

14. (currently amended) The method of claim 10 further comprising obtaining [[a]] the gating signal using signature analysis.

15. (original) The method of claim 14 wherein using signature analysis includes providing a training set within a database and employing a pattern recognition technique to extract a gating signal.

16. (currently amended) A method of gating for a medical imaging system, the method comprising:

selecting a non-electrical sensor, the non-electrical sensor being a force sensor;

utilizing the non-electrical sensor to acquire information for gating; [[and]]

determining timing of a gating signal prior to displacement of a body part of a patient based upon the acquired information; and

gating using the ~~acquired information~~ gating signal.

17. (canceled)

18. (currently amended) A method of gating for a medical imaging system, the method comprising:

selecting a non-electrical accelerometer;

arranging the accelerometer on a wrist of a patient;

utilizing the non-electrical accelerometer to acquire information for peripheral pulse gating; [[and]]

determining timing of a gating signal prior to displacement of a body part of a patient based upon the acquired information; and

gating using the ~~acquired information~~ gating signal.

19. (canceled)

20. (currently amended) The method of claim 18 further comprising:

obtaining an acceleration waveform from the accelerometer[[,]];

calculating a time delay for information being transmitted from a heart of the patient to a peripheral pulse[[,]]; and

characterizing the signal.

21 - 24. (cancelled)

25. (currently amended) A method of using a sensor for gating, the method comprising:

providing a non-electrical accelerometer;

providing a fluid filled transmission tube having a first end and a second end;

attaching the first end of the fluid filled transmission tube to a chest wall of a patient adjacent a heart of the patient;

attaching the second end of the fluid filled transmission tube to the sensor;

utilizing the non-electrical accelerometer to acquire information for gating;
[[and]]

determining timing of a gating signal prior to displacement of a body part of a patient based upon the acquired information; and

gating using the ~~acquired information~~ gating signal.

26. (original) The method of claim 25 further comprising placing the sensor out of a field of view during an imaging process.

27-28. (canceled)

29. (original) The method of claim 25 further comprising connecting the sensor to a sensor box via an electrical connection for recording information acquired by the sensor.

30. (original) The method of claim 29 further comprising sending information from the sensor box to a signal processing and computer analysis station.

31. (original) The method of claim 25 wherein providing a non-electrical sensor comprises providing a sensor having a bandwidth of at least 125 Hz.

32. (previously presented) The method of claim 1 further comprising utilizing the non-electrical sensor to acquire information for respiratory gating.

33. (currently amended) The method of claim 32 further comprising:

obtaining an acceleration waveform with the accelerometer[[],];

integrating the acceleration signal twice to obtain a resultant signal[[],];

band pass filtering the resultant signal to remove frequencies that cause drift in the resultant signal and frequencies corresponding to cardiac motion to obtain a filtered signal[[],];

analyzing the filtered signal for salient peaks[[],]; and

obtaining a trigger point for respiratory gating.

34. (previously presented) The method of claim 16 further comprising utilizing the non-electrical sensor to acquire information for respiratory gating.

35 – 36. (canceled)

37. (currently amended) A method of using a sensor for gating, the method comprising:

providing a non-electrical accelerometer;

providing a fluid filled transmission tube having a first end and a second end;

attaching the first end of the fluid filled transmission tube to a wrist of a patient adjacent a radial artery of the patient;

attaching the second end of the fluid filled transmission tube to the sensor;

utilizing the non-electrical accelerometer to acquire information for gating;

[[and]]

determining timing of a gating signal prior to displacement of a body part of a patient based upon the acquired information; and

gating using the acquired information gating signal.

38. (canceled)

39. (currently amended) The method of claim 1 ~~further comprising wherein:~~

the determining comprises:

~~in response to the acquired information from the acceleration sensor,~~
calculating a first derivative of an acceleration waveform to obtain a jerk waveform[.,,];
and

~~determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for the gating; and~~

the gating comprises utilizing the salient-peak as a trigger point.

40. (new) The method of claim 16 wherein:

the determining comprises:

calculating a first derivative of an acceleration waveform to obtain a jerk waveform; and

determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for the gating; and

the gating comprises utilizing the salient-peak as a trigger point.

41. (new) The method of claim 18 wherein:

the determining comprises:

calculating a first derivative of an acceleration waveform to obtain a jerk waveform; and

determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for the gating; and

the gating comprises utilizing the salient-peak as a trigger point.

42. (new) The method of claim 25 wherein:

the determining comprises:

calculating a first derivative of an acceleration waveform to obtain a jerk waveform; and

determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for the gating; and

the gating comprises utilizing the salient-peak as a trigger point.

43. (new) The method of claim 37 wherein:

the determining comprises:

calculating a first derivative of an acceleration waveform to obtain a jerk waveform; and

determining a salient-peak of the jerk waveform, and utilizing the salient-peak as a trigger point for the gating; and

the gating comprises utilizing the salient-peak as a trigger point.